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United States
Department of
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Animal and
Plant Health
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Veterinary
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National Poultry
Improvement Plan



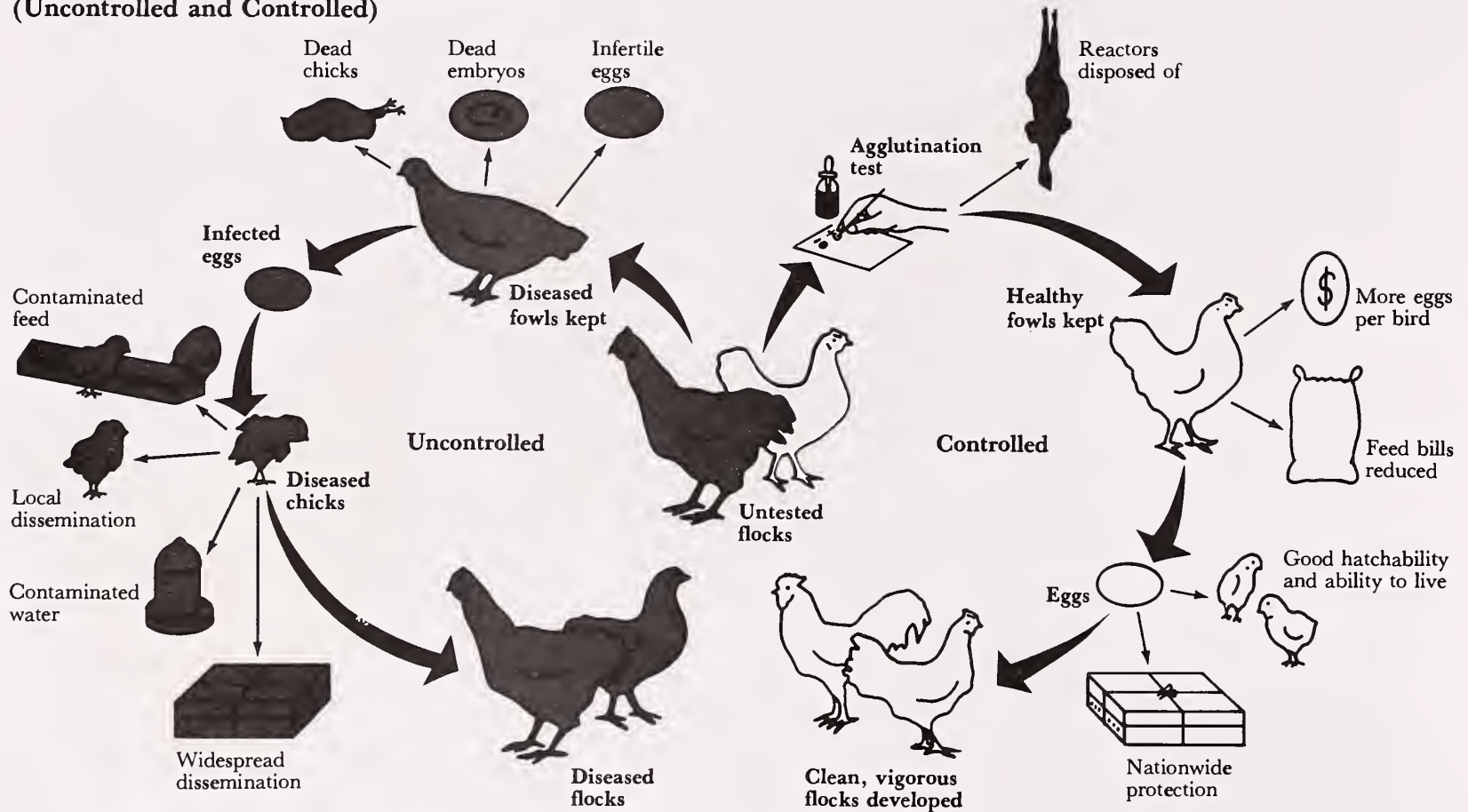
Helping You, the Poultry Breeder, Prevent Disease



#1315

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Pullorum Disease of Chickens and Turkeys (Uncontrolled and Controlled)



National Poultry Improvement Plan (NPIP)

Pullorum is a bacterial disease of poultry that is transmitted from a hen to her chicks via the egg. By testing adult birds and eliminating disease carriers from the breeding flock, commercial chicken and turkey raisers have eliminated this costly disease. The fact is, it has been so long since most people have seen pullorum that it comes as sort of a shock to learn that it is still around. But pullorum can be found in small breeding flocks of fancy, poultry.

The National Poultry Improvement Plan, NPIP, was started in the early 1930's to coordinate State programs aimed at elimination of pullorum from commercial poultry. In those days, there were many poultry breeders serving the needs of thousands of small flock owners. Today, there are only a very few breeders of commercial poultry to serve the commercial raisers of flocks, which may number into the millions.

The only small breeders left are those that raise fancy fowl. Some 2,500 of these breeders, and hatcheries that deal in fancy fowl, are members of NPIP. A list of these pullorum-clean members is available from the NPIP staff, so everyone can find out where to buy clean stock.

The Plan is administered by the U.S. Department of Agriculture, which maintains a small staff at the Agricultural Research Center, Beltsville, Md, to service the needs of NPIP. The Plan is a volun-

tary program conducted by State agencies and cooperating poultry industry segments.

In many States, pullorum-testing is a free service provided by the official State agency. In other States, there is small charge. In many States, it is possible to get training so individual poultry raisers can conduct their own tests.

Pullorum Disease

This disease, which occurs in all parts of the world, is caused by a microscopic organism, *Salmonella pullorum*. The chicken seems to be the natural host of the organism.

The main reservoirs of pullorum infection are the egg-producing organs of the infected female. The disease is transmitted from her to her young directly through the egg.

Pullorum disease may also strike turkeys, ducks, guinea fowl, pheasants, sparrows, quail, bittern, geese, pigeons, doves, parakeets, and canaries. The organism, which was discovered in 1899, is rarely found in mammals.

Once commonly known as bacillary white diarrhea (BWD) of chicks, pullorum disease has been recognized for more than half a century as one of the worst of all poultry diseases.

Pullorum disease causes heavy death losses in chicks and poults and reduces the productivity of adult birds. The deaths occur mainly during the first three weeks after hatching. Losses may be as high as 80- to 90-percent of the brood. Pullorum disease is not commonly encountered in the acute form in birds more than one month old. Infected adults usually show no outward evidence of infection.

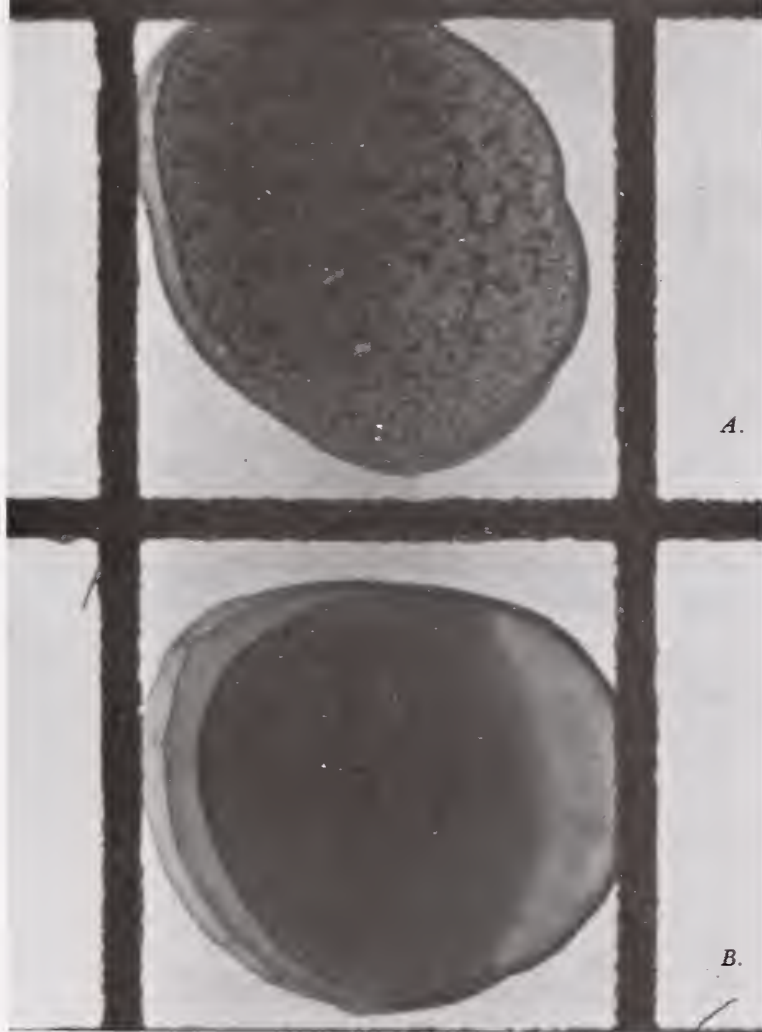
Great strides have been made toward eradicating pullorum through the national program of blood testing adult breeding flocks, supplemented with sound sanitation.

The infection may be spread among the brood through breathing or consuming contaminated dust, down, or other material in the incubator, shipping box, brooder, or pen. The disease is also transmitted through consumption of litter, feed, or water contaminated with infected droppings. One infected chick or poult at hatching time may be responsible for transmitting the disease to the entire brood. The infection is usually spread during the first few days. Unsanitary conditions, improper heating or ventilation, and the occurrence of other diseases can hasten spread.

Infected chicks or poults that do not die of the disease may grow to maturity and remain lifetime carriers. Infected hens may lay infected eggs that may hatch diseased chicks; thus, the cycle is repeated. Transmission sometimes happens among adult fowl through consumption of infected droppings or broken eggs.



Blood testing fancy poultry at a show.



Reactions to the stained-antigen, rapid, whole-blood test.
A. Positive; B. Negative.

Control and Eradication of Pullorum

Pullorum disease control must be based on breaking the cycle of transmission. This is done by detecting and eliminating adult carriers, because the disease is largely eggborne.

Such a procedure makes the owner reasonably sure that only *noninfected* eggs are set and *noninfected* chicks and poults are hatched.

Blood-testing of adult chickens and turkeys in breeding flocks is done throughout the United States. The agglutination test, used in detecting pullorum carriers, is conducted by one or more of the four officially recognized methods; namely, the agglutination test, the rapid whole-blood plate test, the rapid serum plate test and the microagglutination test.

Each test is based on the fact that infected birds carry in their blood stream immune substances (antibodies), which will clump (stick together or agglutinate) a liquid suspension of killed-pullorum organisms (antigens) when the test suspension is mixed with the serum or the whole blood of the infected bird. The blood of noninfected birds does not contain pullorum antibodies, and therefore no clumps form when the whole blood or serum of such birds is mixed with the antigen.

The rapid whole-blood test has been most widely used for testing chickens. The test is easily conducted in the field by anyone trained in its use.

A pullorum-testing program is mandatory in many States. Some States require complete flock-testing of foundation breeders of chickens, turkeys, fancier show birds, guinea fowl, and other susceptible species.

A negative pullorum test or certification that birds originated from pullorum-clean flocks is required by most States for birds being exhibited at shows and fairs.

Such requirements have been helpful in locating pullorum-infected flocks of hobby, fancy, or exhibition chickens, thereby bringing the Nation a step closer to being free of pullorum.

Fowl Typhoid Disease and Other Diseases

Fowl typhoid is caused by another salmonella closely related to pullorum, and the two diseases share common antigens.

Birds infected with fowl typhoid react to the pullorum test. Fowl typhoid has been considered on the same basis as pullorum by NPIP since 1954. That is the reason why poultry flocks with a negative test are now designated as "U.S. Pullorum and Typhoid Free."

Tests are also used to identify and eradicate other egg-transmitted diseases in the breeding and hatching of commercial poultry. Several types of Mycoplasma are being identified and eliminated

through this process. Egg-transmitted or hatchery-transmitted bacterial diseases that may be controlled by management programs or where the infected breeding flock may be identified by diagnostic tests may lend themselves to future National Plan programs.

Where to Get More Information

Each year, the National Poultry Improvement Plan staff publishes a list of breeders and hatcheries that participate in the program. Copies of these lists are available by writing to Poultry Improvement Plan, APHIS-VS, United States Department of Agriculture, Building 265, BARC-East, Beltsville, MD 20705.

Included with the lists are the names and addresses of the official State agencies. These State agencies are the organizations to contact if you are interested in participating in the NPIP.

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